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The Systems Approach to Defense Decision Making, A Defense Resources Management Institute presentation

Monterey, California; Naval Postgraduate School



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The Systems Approach to Defense Decision Making



A Defense Resources Management Institute presentation

Spectrum of analysis

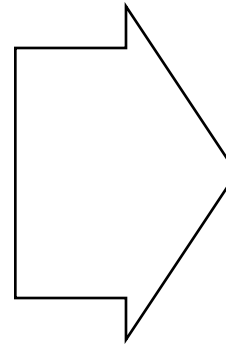
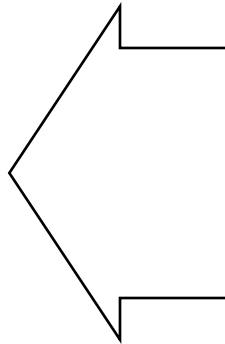


Systems Analysis

Program Analysis

Operations Analysis

Broad, high level
Long term
Objectives and
constraints variable
More alternatives
- many unknown
General solutions



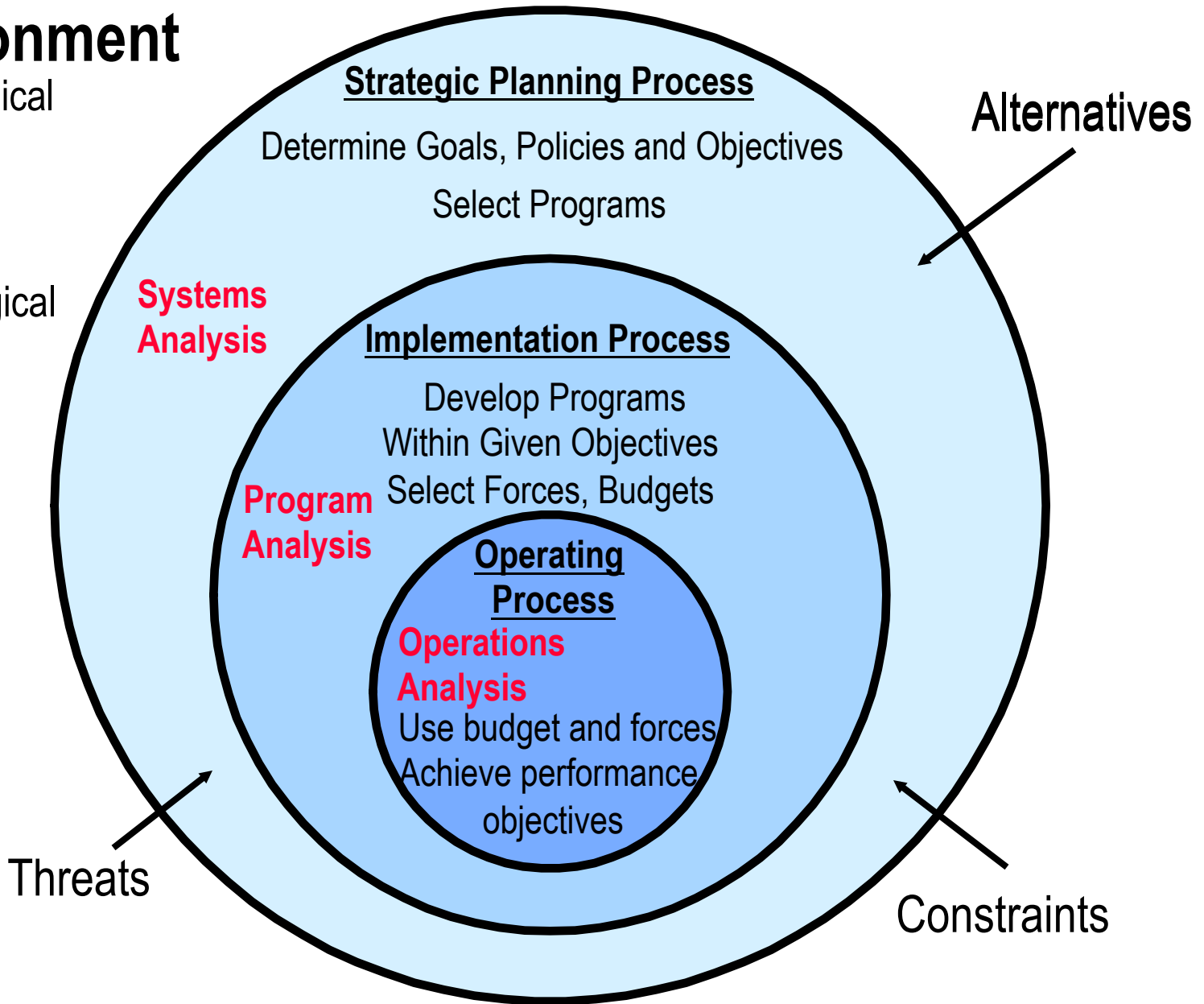
Narrow, focused
Short term
Fixed objectives
and constraints
Fewer alternatives
- mostly known
Precise solutions

**Prioritizes among
competing goals**

**Can “solve”
problems**

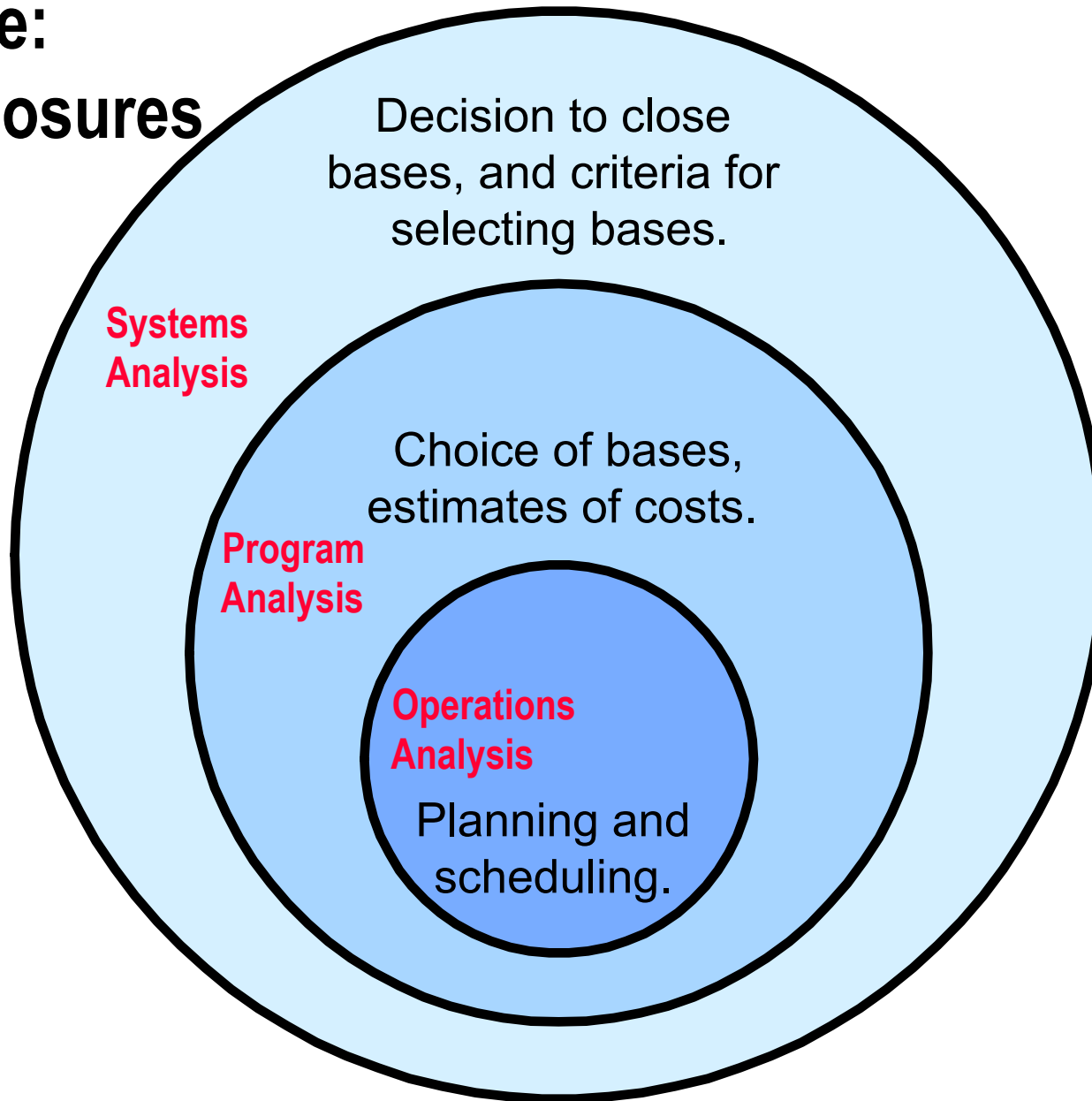
Environment

Technological
Economic
Political
Legal
Psychological
Cultural
Historical

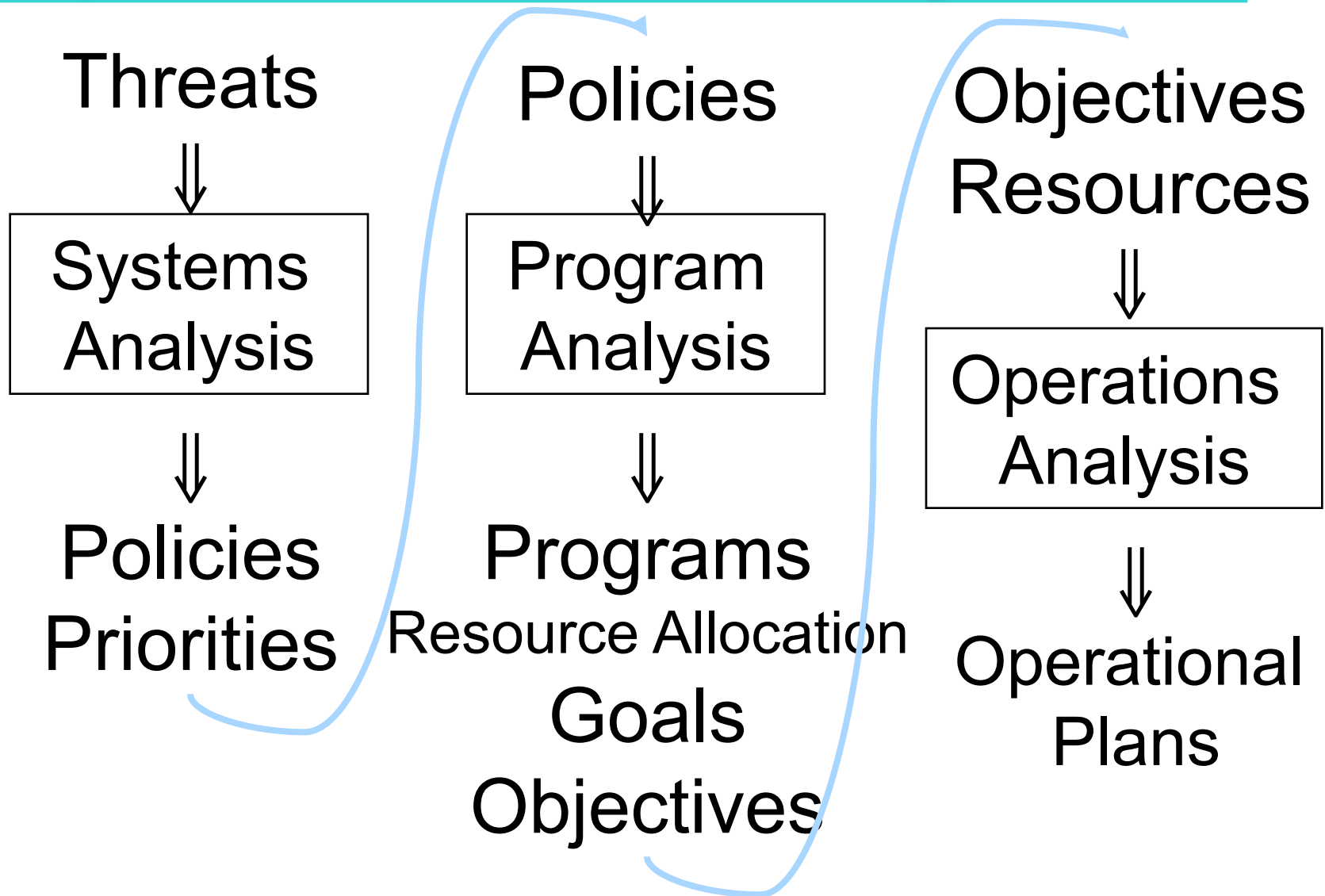


Example:

Base Closures



Spectrum of analysis



What is the Systems Approach?

A way of approaching decision problems, requiring systematic:

- search for more and better alternatives
original alternatives may not include best options!!!
- review of decision makers' objectives, constraints, and relevant criteria
- evaluation of impacts of implementing alternatives

Systems Approach

- Looks at the Big Picture
- Must consider the
- decision environment
 - Technological
 - Economic
 - Political
 - Legal
 - Psychological
 - Cultural
 - Historical
- Repeatedly asks “Why?”

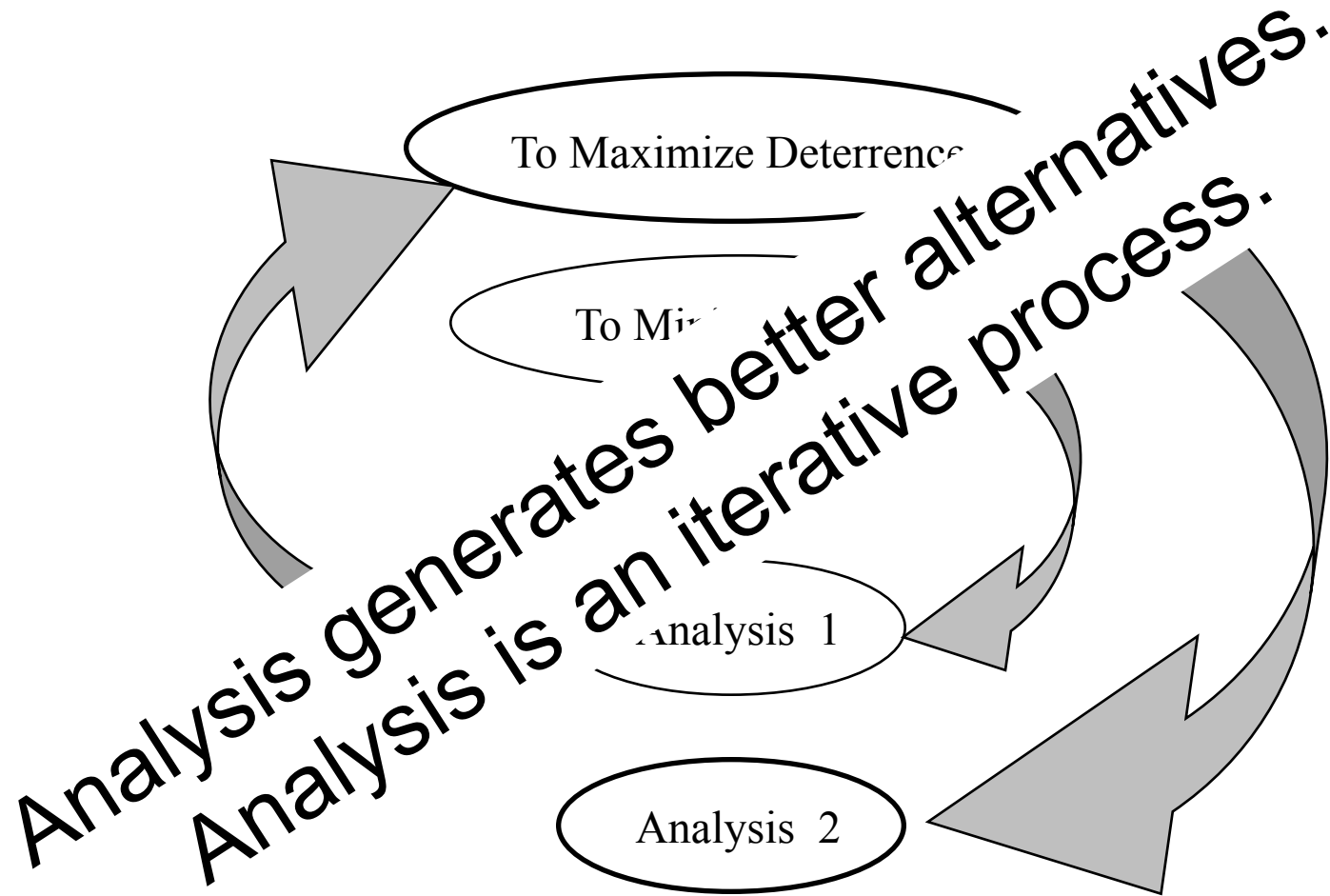
Systems Approach

Combines objective and subjective analysis

- Objective analysis
 - Often quantitative
 - Uses scientific methods
- Subjective analysis
 - Often qualitative
 - Based on judgment, experience, intuition
 - Necessary for synthesis, integration

Example 1:

Overseas Air Base Study



Example 2:

Disinformation

Beware of Unintended Consequences.

Example 3:

Forest Fires

Look out for “feedback loops”

Products of Analysis

Models to predict consequences of alternatives

- Cost analysis
 - Life cycle costs
 - Cost:benefit ratio
 - Return on investment
- Measures of effectiveness
- Measures of risk

Products of Analysis

Better basis for communication

- Preferences made explicit
- Process can be retraced by others
- Limitations of analysis are clearly understood
- Assumptions can be tested and challenged
- Reassessment can lead to new solutions

Products of Analysis

New Insights

- Understanding of goals and objectives
- Understanding of critical trade-offs
- Ways to manage risk and uncertainty
- New alternatives may be generated

Solve difficult problems

Process of Analysis

- **Conceptual Phase:** Define issues of concern, clarify objectives, limit problem
- **Research Phase:** Identify data, relationships, alternatives
- **Analytic Phase:** Build models; use them to predict consequences of alternatives
- **Interpretation:** Compare outcomes predicted by the models; derive conclusions; select course of action

Pitfalls in All Analysis

- Not enough time spent defining the problem.
- Examining a restricted range of alternatives.
- Too much time spent in the details of the models.

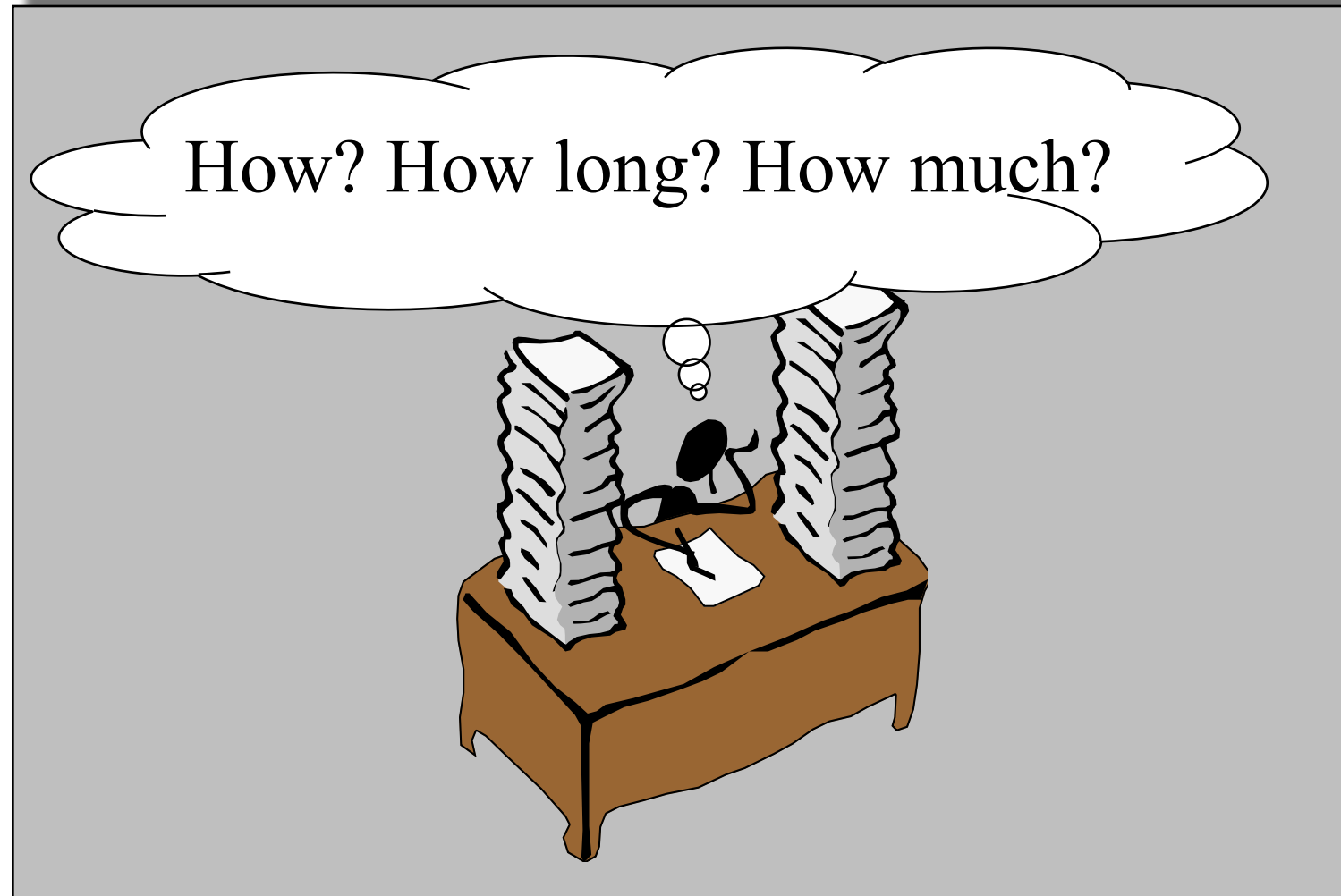
Benefits of Systems Approach

- Generates new and better alternatives
- Better predicts unintended consequences
- Proactive, not reactive, solutions
- Integrated planning:
 - Coordination within large organization
 - Rational resource allocation

Summary

- Ask the right questions
- Systems Analysis doesn't provide solutions, but insight (about objectives, tradeoffs, courses of action, uncertainty...)
- There are always unintended & unexpected consequences to decisions
- **It is more important to do the right thing than to do things right!**

Operations Analysis



Systems Analysis

